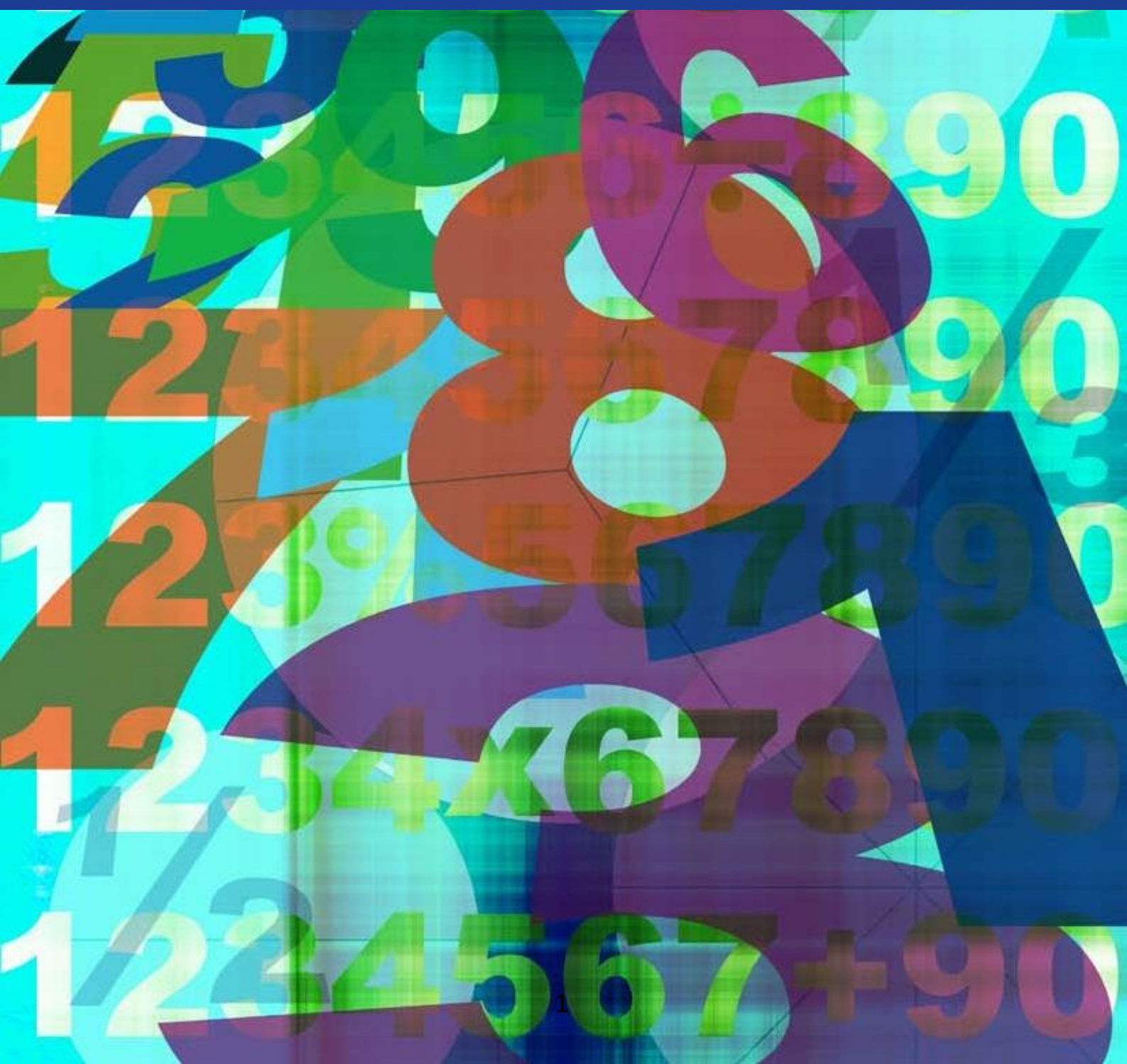


Tutor Guide

Application of Number - FETAC Level 3



About the Tutor Guide

This tutor guide relates to the Learner Pack in Level 3 Application of Number.

Like the Learner Pack, it is divided into the two Units of the award component: Unit 1: Number, and Unit 2: Measurement and capacity.

Within each Unit, the guide is divided into sections called 'Activities', numbered according to the same code used in the Learner Pack:

Unit 1 Activities are coded N1, N2 etc. ;

Unit 2 Activities are coded M1, M2 etc. - the M standing for Measurement.

The guide provides suggestions on how to introduce and guide the learners through each Activity. Use it alongside the accompanying Resource Pack which contains the Practice Sheets, Solution Sheets and other resources referred to in the guide.

The Activities are based on themes that arise in the real world. However, the learning outcomes from each Activity can be achieved by applying the same maths knowledge and skills to other topics. As far as possible use topics and activities that your own particular learners find interesting. Plan to use activities from their real world contexts - their everyday lives and interests in and out of the centre.

- Consider your learners and their real world contexts - including their lives and interests **outside** of the centre. Knowing your learners, what other topics or interests do you think would give a meaningful context to explore and use the maths concepts and skills covered in this pack?
- As a staff team plan how to use the learners' **everyday life and environment in the centre** as a context for using and learning this maths.
- Plan to use the context of **the main subject** you teach (if it is not numeracy or maths). What are you and the learners currently working on and what do you plan to do next in your course? What numeracy and maths are you and the learners using as a natural part of that? Plan to help the learners 'see' the maths they are using - the maths embedded in what they are doing and learning in your vocational or subject area. Plan how to include more opportunities for learners to see and use the maths from this activity in the context of what you are doing in your subject. Share this information with the maths and numeracy tutor so that they can get to know as much as possible about the real world maths that the learners meet or use in the centre.
- If you are the **maths or numeracy tutor**, get to know what learners are doing in their other subjects and activities in the centre. Discuss this with your colleagues and together identify the maths involved. Plan together how to integrate the maths knowledge and skills from the activities in this pack with those other subjects and activities.

Please note that the guidelines in this pack assume the tutor is a maths tutor or is working in close cooperation with a maths tutor.

Activity

Using the calculator

Code N1



This activity links to **Award Learning Outcome 1.3**

Learning Outcomes

1. Perform addition, subtraction, multiplication and division on a calculator.
2. Use the clear key of your calculator.

Key Learning Points

1. Calculator

Materials

- Calculator (preferably a scientific calculator)
- Task sheets in this section

Prior learning

Learners should understand the importance of having a rough idea of what their answer might be before they use the calculator.

Guiding the learners through the activity

- Explain what the learners will be able to do after this activity. The aim of this activity is to help them learn how to use the calculator to perform addition, subtraction, multiplication and division.
- Many of the learners may be familiar with using calculators. Use discussion to determine how much the learners already know about calculators and the functions of the calculator.
- Learners will have different calculators and you may need to show them, or ask them to show each other, specifics such as where the plus button or negative button is.
- After this activity the learners should be competent at using a calculator for addition, subtraction, multiplication and division. However it is also important to encourage them not to only rely on their calculator. Even if we have a calculator we need to know how to add or subtract! Always encourage learners to work out what they can first before turning to the calculator. Throughout this programme, encourage learners to use the calculator to check their own calculations.

Activity

Playing Darts

Code N2



This activity links to **award learning outcomes 1.1 and 1.5**

Learning Outcomes

1. Understand the concept of a natural number
2. Recognise natural numbers
3. Add natural numbers

Key Learning Points

1. Natural Numbers
2. Addition

Maths - Natural Numbers

Key points to highlight

- Natural numbers are always positive whole numbers
- Natural numbers include zero (0)
- A negative number is not a natural number
- A number with a decimal point is not a natural number
- A number with a fraction is not a natural number

Materials

- A dart board or a picture of a dart board
- Coloured markers, pencils for the drawing exercise
- Access to the internet would be useful
- Practice Sheet N2
- Solution sheet N2

Guiding learners through Activity N2

- Use a mixture of individual, pair or group work as you judge appropriate for your group.
- Tell the learners what the activity aims to help them to know, understand and do. It will introduce the concept of natural numbers. It will also give practice in adding those.
- Set the real life context for the learners. Activity N2 is based on the game of darts. Facilitate **group discussion** on the topic of darts. What personal experience do the learners have of this game? What do they know about professional darts - do they follow it?
- Individually or in pairs, learners could find out the rules by searching the internet or by asking a friend or staff member who knows.
- You could ask for a volunteer to explain the rules of the game to the group.
- Introduce the term **natural** numbers. Ask learners to **say what they already know** about this. For example, ask them to show any natural numbers they can see around them there and then. Ask them to list all the natural numbers they might have seen so far that day.
- Build on prior maths learning: Explain that natural numbers are always **whole**, positive numbers. Check that learners understand what those last two terms mean and **recap on that if necessary**. You can use a number line or a temperature gauge to illustrate the meaning of positive number. Use real life examples such as the temperature gauge in the fridge in the centre's kitchen. Stress that it is only the **whole** positive numbers that are 'natural' numbers. Point these out and give examples. Ask learners for other examples of positive whole numbers - also called **natural** numbers.
- Point out the **mathematical symbols** for positive and negative, and that the symbol for natural numbers is **N**.
- Guide learners through the tasks in Learner Pack.
 - Task 1: Recognising natural numbers. This helps learners distinguish whole, positive numbers from negative numbers and numbers with a fraction or a decimal point.
 - Task 2: Drawing a darts board: This aims to engage the learner and to provide an illustration for the other tasks. Stress that the numbers should be clearly visible in the drawing. These are all natural numbers. The darts board is divided into a number of equal parts. Drawing these with care may give a useful illustration for later work on fractions and on equivalence. Ask learners to label the drawing so that you can see where on the board players can score a bull's eye, a double, a treble.
 - Task 3: Adding natural numbers based on darts scores.

Language Tip: The segments on a darts board are called 'beds' in the language of darts.

- Play a game of darts after the activity if the facilities are available to you. Or watch a game online or on DVD. Take turns in keeping score.
- The scoring system in darts includes both addition and subtraction. Subtraction is covered in the next Activity. At this stage the main point is to practise addition of natural numbers. Learners who may have difficulty with subtraction could take the role of adding up each player's score; you or another player could have the subtracting role.
- In darts you can score 'double or treble' scores. Show the learners how you can calculate these scores through addition.
- Refer to the Learner Pack for other activities that would reinforce the learning.
- Learners should be able to do the tasks without a calculator although they could check their solutions using the calculator.
- Practice sheet N2 gives more practice in the addition of natural numbers.

Extension Activities

You can use many other activities and topics to extend the maths learning from this Activity. addition of natural numbers. You could present a scenario such as the following:

The centre is organising an outdoor activity day that involves climbing the Sugar Loaf mountain in Co Wicklow. You could build in some short maths challenges in the run-up to that.

For example, you could ask the learners to work out the height of the Sugar Loaf.

You could use the extension activity on the next page, 'How high is the Sugar Loaf?'

You could also use the extension activity 'Climbing a mountain in Peru'. That example builds a very similar maths challenge into learning about world geography and cultures. The specific topic is Peru. The tutor gives this maths challenge to help learners practise addition skills at the same times as learning or reinforcing some points about the geography, history and culture of Peru. It also reinforces some of the key words in the subject of geography - for example, summit.

If used to trigger or reinforce wider learning, learners could also be asked to look up other information about Peru: for example learners could try to find Cusco on a map, or research who the Incas were, find other mountains near Machu Picchu, or draw a map showing the locations named.

Here are the answers to the two sample extension activities on the next pages:

How high is the Sugar Loaf? **Answer:** 501 metres.

Climbing a mountain in Peru **Answer:** 5,100 metres.

Adding natural numbers

How high is the Sugar Loaf?

Try working it out from this story.

Siobhan and John climbed the Sugar Loaf a few months ago. They were with a group and had a guide. It was their first time doing that kind of thing. After a while the guide said they should all sit and rest. He said they were doing well - that they had just climbed 300 metres. After the break they carried on until they reached the top. The guide said they had just done another 201 metres.

So: **how high is the Sugar Loaf?**



Adding natural numbers

Climbing a mountain in Peru

Aisling travels to Peru for a two day trek. She is in a group led by a guide. They start in the town of Cusco and trek up the mountain to the lost city of the Incas - the famous Machu Picchu. On the first day they climb to a height of 3,348 metres. On the second day they reach the summit. The guide says that they have climbed another 1,752 metres.

Work out how high the mountain is.



Activity

Rugby Union

Code N3



This activity is linked to the **Award Learning Outcomes 1.1, 1.3 and 1.5.**

Learning Outcomes

1. Understand the concept of a natural number
2. Recognise where subtraction of natural numbers is necessary
3. Subtract natural numbers

Key Learning Points

1. Natural Numbers
2. Subtraction

Materials

- The Task Sheets this section.
- Practice Sheet N3
- Solution Sheet N3

Guiding the learners through Activity N3

- Explain what the learners will be able to do after this activity.
- Introduce the concept of subtraction of natural numbers through discussion of rugby. If rugby is not of interest to your learners then change the activity to suit their interests: for example, using Gaelic football, hurling, basketball.
- Before asking them what they need to know, ask them what they do already know from the last activity?
- Before undertaking the activity, learners need to have an idea of the rules of the game of rugby. You could set a task for them to look up the rules using the internet or ask a learner who does know some of the rules to explain them to the other learners.
- After you explain and discuss the activity, learners are asked to try some examples themselves. You might like them to work in pairs to discuss their answers. Once learners have completed their task individually, ask them to explain their answer to their partner.
- Following this, there is an activity which allows learners to put their newly learned skills into practice. The example here is of drilling a well. Before attempting the task, ask students what they know about drilling a well, if anything?
- Practice Sheet N3 allows learners to develop skills in subtracting whole numbers. Remind learners not to use their calculator for these practice skills but that they can check their answers on a calculator.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best to involve your learners actively.
- Encourage learners to enter new terminology in their personal dictionaries.

Activity

Playing Darts (2)

Code N4



This activity is linked to the **Award Learning Outcomes 1.1 and 1.5.**

Learning Outcomes

1. Recognise where subtraction and addition of number is relevant and necessary.
2. Add and subtract natural numbers.

Key Learning Points

1. Natural Numbers
2. Subtraction
3. Addition

Materials

- A darts board
- Task Sheets
- Practice Sheet N4
- Solution Sheet N4

Guiding the learners through Activity N4

- Explain what the learners will be able to do after this activity.
- Before asking them what they need to know, ask them what they do already know from the activities N2 and N3.
- Introduce subtraction by linking it with the previous activity of addition.
- Ask learners to work in pairs to discuss their answers.
- Following this, learners play a game of darts. Each learner should get experience keeping score and show evidence of this (without use of calculator). Remind the players and scorekeepers that for any triple or double scores, **add** the scores together (multiplication will be introduced later)
- Practice Sheet N4 allows learners to develop skills in adding and subtracting whole numbers. Remind learners **not to** use their calculator for these practice skills but they can check their answers on a calculator.

Activity

Temperature

Code N5



This activity is linked to the **Award Learning Outcomes 1.1 and 1.5.**

Learning Outcomes

1. Understand the concept of integers.
2. Recognise negative numbers.
3. Realise the role of negative numbers in everyday life.

Key Learning Points

1. Integers
2. Negative Numbers

Materials you will need

- Temperature Cards from the resource pack
- The task sheets in this section
- Practice Sheet N5
- Solution Sheet N5

Guiding the learners through Activity N5

- Explain what the learners will be able to do after this activity.
- Introduce the concept of integers, particularly negative numbers, through the topic of weather and of temperature.
- Recap: Ask learners **what they already know about numbers?** Are there any other types of numbers other than positive numbers? Where do they use negative numbers?
- Introduce and explain the number line. Use the example of temperature here, for example, ask learners to place -10 degrees on a number line and 12 degrees on a number line. Discuss the difference in temperature.
- After you explain and discuss the activity, ask the group to try some further examples themselves. You might like them to work in pairs to discuss their answers.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best to involve your learners actively.
- Guide learners through the activities on the language and symbols of maths. Encourage learners to enter new terminology and new symbols in their personal maths dictionaries.
- Use the **Temperature Cards** for an activity that allows learners to put their newly learned skills into practice. Divide the large group into smaller groups and give each small group a set of temperature cards. Each group should have the same cards. Ask them to arrange the cards from lowest to highest temperatures. Facilitate groups to present and discuss their findings.
- Practice Sheet N5

Activity

Climate

Code N6



This activity is linked to the Award Learning Outcomes **1.1, 1.3 and 1.5.**

Learning Outcomes

1. Further understand the concept of integers
2. Appreciate the use of addition and subtraction of integers in real world situations
3. Add and subtract integers

Key Learning Points

1. Integers
2. Addition
3. Subtraction

Materials

- The task sheets in this section
- Practice Sheet N6
- Solution Sheet N6

Guiding the learners through Activity N6

- Explain what the learners will be able to do after this activity.
- Recap on previous activity; ask some questions to check learning and understanding. Ask learners **them what they do already know about negative and positive numbers?** Where do they use negative numbers? Can they remember, or think of further examples, of real life situations where both positive and negative numbers come into play?
- Before undertaking the activity, remind learners of the number line and how to add and subtract integers. Temperature in different climates will be used as the topic in this activity.
- Before doing the activity, you could ask learners to look up the current weather forecast. This could be repeated for a number of countries (including countries with colder climates) and you could have a whole group discussion about varying temperatures.
- After you explain and discuss the activity, ask learners to try some further examples themselves. They could work in pairs to work out and discuss their answers.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best to involve your learners actively.
- Encourage learners to enter new terminology and new symbols in their personal maths dictionaries.
- Use other topics and situations to reinforce the learning. For example, goal difference in the Premier League.
- Use Practice Sheet N6. Remind learners not to use their calculator for these practice skills but that they can check their answers on a calculator.

Activity

Calories

Code N7



This activity is linked to the **Award Learning Outcomes 1.1, 1.3 and 1.5.**

Learning Outcomes

1. Recognise the need for multiplication of integers.
2. Multiply integers

Key Learning Points

1. Integers
2. Multiplication
3. Addition and Subtraction

Materials

- The task sheets in this section
- Practice Sheet N7
- Solution Sheet N7

Guiding the learners through Activity N7

- Explain to learners what they will be able to do after this activity.
- Recap on previous learning, especially on integers.
- Introduce the concept of multiplication of integers with the same sign (positive or negative). The activities highlight multiplication of positive integers. Emphasise during this section that when multiplying two numbers with same sign then the answer is always positive.
- Before asking them what they need to know, ask them what they do already know about multiplying positive whole numbers? Do they know of any instances where they might need to multiply positive whole numbers?
- Facilitate learners to research the recommended daily calorie intake for males and females and to understand how calories are consumed and burned up. This could be done through group/whole class discussion and by using the internet.
- After you explain and discuss the examples ask learners to try the remaining tasks themselves. They could work in pairs to work out and discuss their answers.
- When learners are calculating daily calorie intake, advise them to use whole numbers only.
- Progress to helping learners identify the maths rule that when you multiply numbers with the same sign the answer will always be positive, and allow them to practise this.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best to involve your learners actively.
- Guide learners through the activities on the language and symbols of maths. Encourage learners to enter new terminology and new symbols in their personal maths dictionaries.
- Encourage learners to explain to you and each other how they work out their answers. Encourage them to ask questions.

- The activities that follow encourage learners to put their newly learned skills into practice. In the darts example learners can again play a game of darts this time multiplying where necessary. If the facilities are not available to play a game, a You Tube clip could be shown of a game of darts and paused where necessary for students to compute scores.
- The practice sheet allows learners to develop skills in multiplying integers that have the same sign. Remind learners not to use their calculator for these practice skills but they can check their answers on a calculator.
- Encourage the learners to write about what they have learned. They could write out the steps they took to solve a problem. This helps to reinforce the maths learning as well as developing thinking skills, literacy and communication skills. If you have time, learners could also do some free writing writing triggered by the topics discussed.

Activity

Working with money

Code N8



This activity is linked to the **Award Learning Outcomes 1.1 and 1.5.**

Learning Outcomes

1. Recognise the need for division of integers in real life situations.
2. Divide positive and negative whole numbers.

Key Learning Points

1. Integers
2. Division

Materials

- Task sheets in this section
- Practice Sheet N8
- Solution Sheet N8

- You should be familiar with integers

Integers include all positive **and** negative numbers. Z is the symbol used to represent integers.

Examples of integers are 0, 2, -2, 65, - 736, 10034.

Guiding the learners through Activity N8

- Explain what the learners will be able to do after this activity.
- Recap on what learners know from previous activity
- Before asking the learners what they need to know, **ask them what they already know** about dividing positive whole numbers? Do they know of any instances where they might need to divide positive whole numbers in their daily lives or interests?
- Introduce the concept of **division** of integers **with the same sign** (positive or negative). Ask learners to say what they do already know about dividing integers that have the same sign? The activity highlights division of positive integers. Emphasise during this section that the same applies to division as to multiplication (N6): that is, when dividing two numbers with same sign the answer is always positive.
- After you explain and go through an example, ask learners to try the tasks themselves. They could work in pairs to work out and discuss their answers.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement.
- Encourage learners to enter new terminology and new symbols in their personal maths dictionaries as you go along.
- Encourage learners to explain to you and each other how they work out their answers.
- Progress, when you think learners are ready, to division of integers that have **different** signs: when we divide positive and negative numbers together. Ask learners if they know of any instances where they might need to divide a positive whole number by a negative whole number or vice versa? Discuss real life examples before introducing any rules. Help learners understand why a negative number when divided by a positive number is still negative.
- Progress to the concept and use of division of positive and negative whole numbers (integers). Stress that when **dividing two numbers with different signs, then the answer is always negative.**
- Practice Sheet N8.

Activity

Construction

Code N9



This activity is linked to the **Award Learning Outcomes 1.5.**

Learning Outcomes

1. Understand the importance in which operations are carried out
2. Apply the order of operations to a real life situation

Key Learning Points

1. Natural Numbers
2. Integers
3. Addition, Subtraction, Multiplication and Division

Materials

- Practice sheet N9
- Solution sheet N9

Prior learning

- Learners should be familiar with the maths knowledge and skills from activities N1 - N7.

Guiding the learners through Activity N9

- Explain what the learners will be able to do after this activity.
- Recap learning from the previous activity.
- This activity introduces the concept and importance of order of operations. It highlights the BIDMAS rule. While this rule needs to be introduced the focus should be on why the order is important. What will happen if the order is not followed? Is there more than one correct answer?
- Ask the learners do they think the order in which calculations are done is important? Will it affect the outcome?
- Discuss and break down the activity step by step. The particular operation needed for each task - multiplication, division, addition and subtraction - should be identified. When you have worked through some examples, ask learners to carry out some of the tasks themselves. They could work in pairs to work out and discuss their answers.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Encourage learners to enter new terminology and new symbols in their personal maths dictionaries.
- Encourage learners to explain to you and each other how they work out their answers. Encourage them to ask questions.

Activity

Recipes

Code N10



This activity is linked to the **Award Learning Outcomes 1.1.**

Learning Outcomes

1. Understand the concept of a real number.
2. Recognise real numbers.

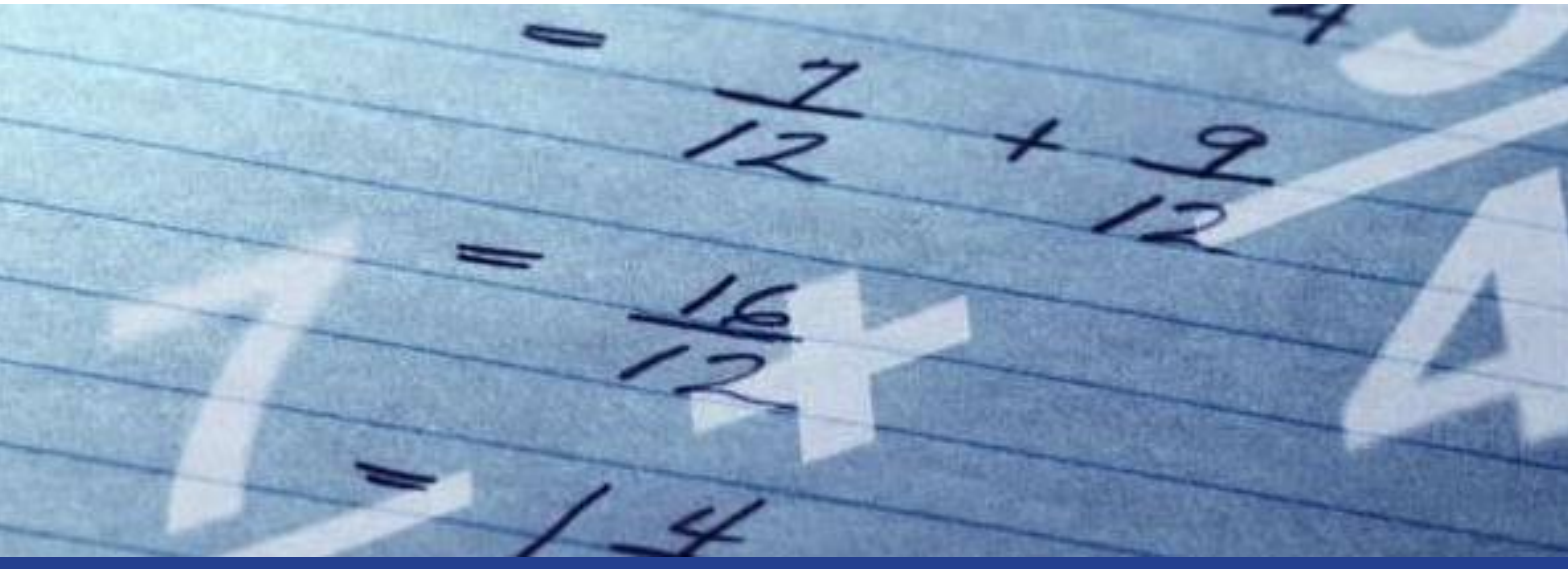
Key Learning Points

1. Real numbers

Materials

- A recipe
- The task instructions
- Practice Sheet N10
- Solution Sheet N10

- Explain what the learners will be able to do after this activity.
- Recap learning from the previous activity.
- Learners should already be familiar with natural numbers and integers. They have heard of fractions and decimals but tutors should briefly remind learners of what these are and what they look like. They will be dealt with in more detail later in the pack.
- The first task asks learners to identify and recognise real numbers. They should be clear that real numbers include almost all numbers.
- The second task looks at a recipe for cooking mushroom soup and helps learners recognise real numbers in a real life situation.
- Ask learners to find any recipe they are interested in and write it out. They must identify and write out all real numbers in the recipe.
- The Practice Sheet allows learners to practise their skills in identifying real numbers.



This activity is linked to the **Award Learning Outcomes 1.1, 1.2 and 1.5.**

Learning Outcomes

1. Understand the concept of common fractions
2. Recognise the use of fractions in everyday life
3. Know how to name and write common fractions

Key Learning Points

1. Fractions

Materials

- The circles fraction kit
- The task instructions
- Practice Sheet N11
- Solution Sheet N11

Prior learning

- Learners should be familiar with the maths knowledge and skills from previous activities.

Guiding the learners through Activity N11

- Explain what the learners will be able to do after this activity.
- In this activity your aim is to help learners understand the concept of fractions and to be able to name and write fractions.
- Ask the learners if they know what a fraction is? Do they know another name for fractions? Does anyone know how to write fractions be using symbols?
- Use the fraction circles in the resource pack.
- Before you start the tasks, ask learners to form groups of about 6 with one fraction kit for each group. Allow learners time to examine the kit. Ask them to make up as many single coloured circles as they can.
- This is followed by the naming of fraction pieces and the introduction of symbolic representation: for example, a half = $\frac{1}{2}$. You might decide to introduce the terms numerator and denominator at this stage, but it is not necessary yet: those terms are introduced in a later Activity.
- As you get to less commonly known fractions - for example, $\frac{1}{8}$ - ask learners why the piece is called an eighth and why it is written as one over eight. Stress that: the piece is **one of eight parts that make up a whole circle**. Or describe it as **one piece of the whole circle** which has been divided into **eight pieces**. Repeat this for all pieces making sure to ask learners why the fraction is named as it is.
- Move on to fractions with numerators other than one. Demonstrate: Place **two one third** pieces together and ask: What is this called? How would we write it? Place the **third piece** beside these other two pieces to complete the circle and ask: What happens when we put the third piece beside these to complete the circle? What do we have?
- After this example, ask learners to try some further examples themselves where the numerator is not 1. Learners could work individually or in pairs to work out and discuss their answers.
- Practice Sheet N11

Activity

Circles and fraction snap

Code N12



This activity is linked to the **Award Learning Outcomes 1.1, 1.2** and **1.5**.

Learning Outcomes

1. Understand the term equivalence of fractions
2. Demonstrate an ability to recognise where fractions are equivalent by playing **“fraction snap”**.

Key Learning Points

1. Equivalence
2. Fractions

Materials you will need

- Fraction circles
- Fraction cards
- Practice Sheet N12
- Solution Sheet N12

Prior learning

- Learners should be familiar with the maths knowledge and skills from Activity 11. They should be familiar with using the fraction circles.
- For the **Fraction Card game** they should be familiar with the rules of the card game Snap.

Guiding the learners through Activity N12

- Explain what the learners will be able to do after this activity.
- Recap learning from previous activity.
- This activity introduces the concept of equivalent fractions by using the Fraction Circles.
- In the Getting started section, ask learners if the shaded part of the diagrams of the circles is the same? Can they make any conclusions by looking at these circles?
- In the whole group task, use the circle card $\frac{1}{2}$, show learners $\frac{1}{2}$ and ask them the number of ways we can make a piece of this size using other colours from the fraction circle kit. Ask them to name the fractions. Record the answers using whatever facilities you have - a computer that projects to the class, powerpoint, or on whiteboard or flipchart. Learners will begin to see a pattern develop. Refer back to $\frac{1}{2}$ and $\frac{1}{3}$ and ask the learners to predict how many 18th's, 20th's etc are equivalent to $\frac{1}{2}$ or $\frac{1}{3}$.

Use large denominators that are not in the kit to try to help learners to develop an understanding of the rules of multiplication and division themselves. For example, as well as going forward with $\frac{3}{9} = \frac{1}{3}$, you can encourage them to go backwards with $\frac{1}{3} = \frac{1}{6}$, looking at connections between the fractions.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement.
- Encourage learners to enter the new maths terminology in their personal maths dictionaries.
- Progress to the Fraction Snap game. An interactive, fun game, it will help the learners to progress their understanding of equivalent fractions. Demonstrate how the game works before asking learners to play. The rules of the game are the same as the card game Snap and can be played in groups or pairs. There is a template in the resources pack for tutors or learners to make their own fraction cards.
- Use Practice Sheet N12.

Activity

Come dine with me

Code N13



This activity is linked to the **Award Learning Outcomes 1.2** and **1.5**.

Learning Outcomes

1. Recognise proper, improper fractions and mixed numbers
2. Convert improper fractions to mixed numbers and mixed and whole numbers to improper fractions.

Key Learning Points

1. Improper Fraction
2. Mixed Numbers
3. Proper Fractions

Materials

- Fraction circles kit
- Practice Sheet N13
- Solution Sheet N13

Prior learning

- Learners should be familiar with the maths knowledge and skills from the previous fraction activities.

Guiding the learners through Activity N13

- Explain what the learners will be able to do after this activity.
- Recap learning from previous activity.
- Ask learners if they have ever come across improper fractions or mixed numbers such as $2\frac{1}{4}$. Where have they come across this in everyday life?
- You could use the fraction circles to help in this lesson.
- The first two activities are about naming the parts of a fraction and naming different types of fractions. Guide learners through the tasks. Encourage them to use the new maths language they are learning.
- The task based on preparing a meal should be presented and discussed with learners. Make sure to ask the learners what rule they are using when they try to work out the answer: for example, are they looking for how many whole 2's or how many 2 halves there are in six?
- Ask learners to try some further examples themselves.
- One of the tasks is based on the TV programme Come Dine With Me. Ask learners who know the programme to explain how it works. The tasks involve working from mixed and whole numbers to improper fractions. Guide learners to understand and practise changing from fractions to mixed numbers.
- Practice Sheet N13

Activity

Pizza

Code N14



This activity is linked to the **Award Learning Outcomes 1.2 and 1.5.**

Learning Outcomes

1. Add and subtract fractions **with same denominator.**
2. Visualise addition and subtraction using pizza image or fraction circles.

Key Learning Points

1. Addition of fractions
2. Subtraction of fractions

Materials you will need

- Practice sheet N14
- Solution sheet N14
- The task sheets in this section
- Fraction circle kit from the resources section.

Prior learning

Learners need to be familiar with learning from previous fraction activities.

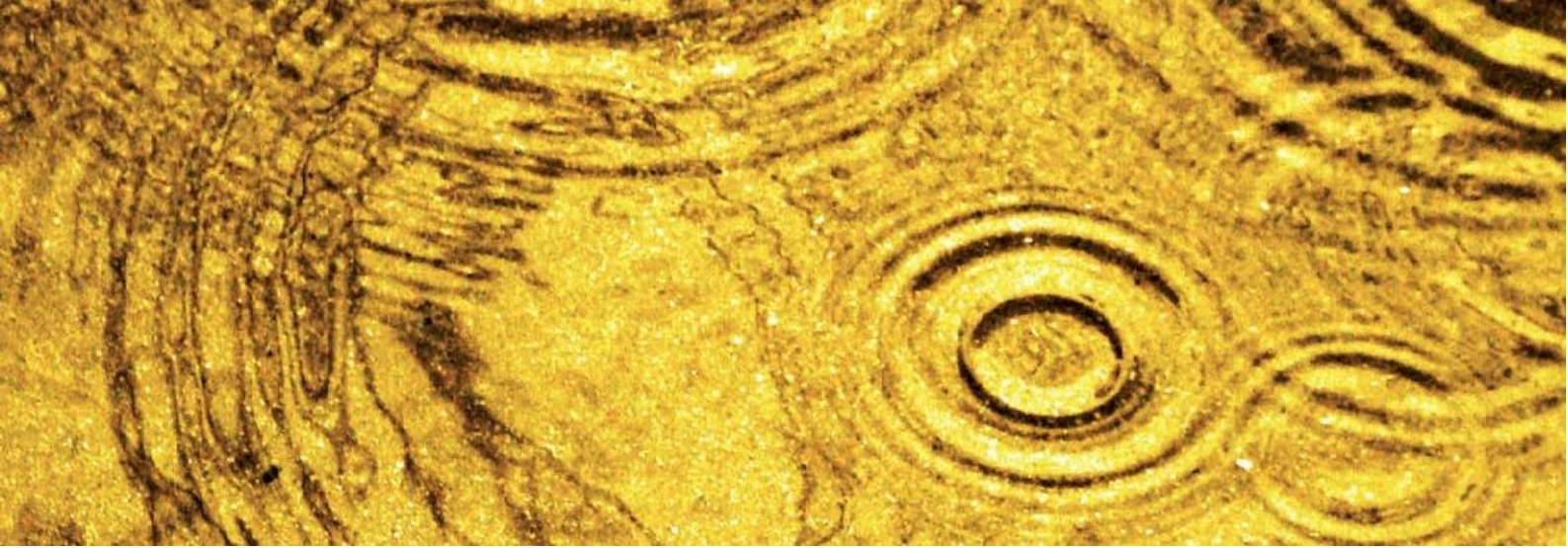
Guiding the learners through Activity N14

- Explain what the learners will be able to do after this activity.
- Before asking them what they need to know, ask them what they do already know from the previous fraction activities.
- Recap and discuss with the class before introducing the activity.
- This activity introduces the concept and skills of addition and subtraction of fractions with **the same denominator**.
- Use the fraction circles and/or the illustrated example of addition and subtraction of fractions to help learners understand the concept and practise the skills. Highlight the fact that we are dealing with fractions of the **same denominator**.
- Ask learners to use fraction circles to work through the example. You may need to recap that means 8 lots of $\frac{1}{8}$ or in other words one full unit.
- After this, ask the learners to try some further examples themselves. Again, encourage them to use fraction circles. Try to use topics and themes that would be relevant to your particular learners.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best to involve your learners actively.
- Encourage learners to enter new terminology and new symbols in their personal maths dictionaries.
- Encourage learners to explain to you and each other how they work out their answers. Encourage them to ask questions.
- Give opportunities to practise addition and subtraction of fractions using learners' real life situations as context.
- Practice Sheet N14

Activity

Circles 3

Code N15



This activity is linked to the **Award Learning Outcomes 1.2 and 1.5.**

Learning Outcomes

1. Add and subtract fractions with **different denominators.**
2. Visualise addition and subtraction using fraction circles.
3. Recognise the need to add or subtract fractions in real life situations.

Key Learning Points

1. Addition of fractions
2. Subtraction of fractions

Materials you will need

- Practice sheet N15
- Solution sheet N15
- The task sheets in this section
- The fraction circles kit from the resources section

Prior learning

You must be familiar with the previous fraction activities.

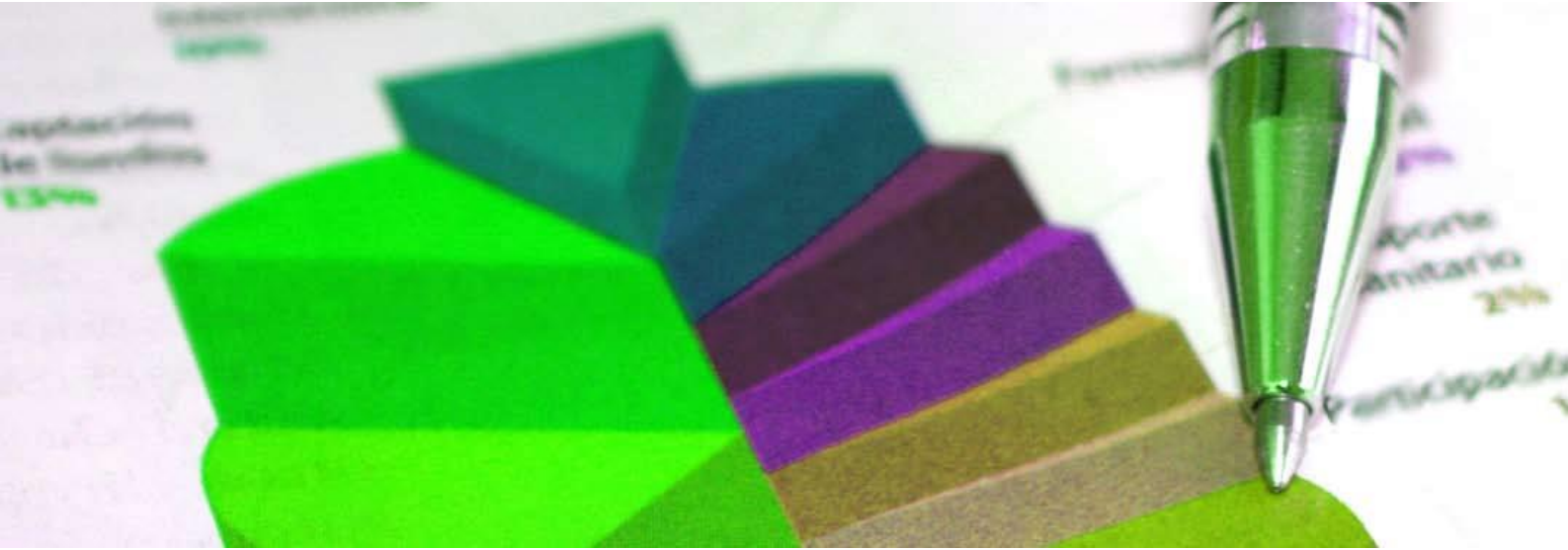
Guiding the learners through Activity N15

- Explain what the learners will be able to do after this activity.
- Before asking them what they need to know, ask them what they do already know from the previous activities.
- Recap and discuss with the class before introducing the activity.
- This activity introduces the concept and skills of **addition and subtraction of fractions with** different denominators. This concrete activity develops understanding of addition and subtraction with different denominators without introducing the term 'common denominator' straight away.
- Fraction circles should be used to enhance understanding. Highlight that we are dealing with fractions of different denominators.
- The first example of $\frac{1}{6}$ and $\frac{1}{4}$ should help learners realise that 5 twelfths will cover the piece $\frac{1}{6}$ and $\frac{1}{4}$. When you separate the $\frac{1}{6}$ and $\frac{1}{4}$ with their coverings of $\frac{1}{12}$'s ask trainees what they notice? You are looking for them to realise that $\frac{1}{4} = \frac{3}{12}$ and $\frac{1}{6} = \frac{2}{12}$. Remind them of equivalent fractions.
- After this example, ask learners to try some further examples themselves. Again, encourage them to use fraction circles.
- The final task in this section provides a real life situation to help learners practise addition and subtraction of fractions. It requires learners to use their knowledge of equivalent fractions.
- Ask the learners to try some further examples themselves. Again, encourage them to use fraction circles. Try to use topics and themes that would be relevant to your particular learners.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best to involve your learners actively.
- Encourage learners to enter new terminology and new symbols in their personal maths dictionaries.
- Encourage learners to explain to you and each other how they work out their answers. Encourage them to ask questions.
- Practice Sheet N15

Activity

A poll

Code N16



This activity is linked to the **Award Learning Outcomes 1.1, 1.2, 1.3 and 1.5.**

Learning Outcomes

1. Understand the concept of multiplying fractions.
2. Recognise the need to multiply fractions in real life situations.
3. Multiply fractions

Key Learning Points

1. Multiplication of fractions

Materials you will need

- Practice sheet N16
- Solution sheet N16
- The fraction circles kit from the resources section

Prior learning

Learners must be familiar with the previous fraction activities.

They should also know something about what a poll is and how it is conducted.

Guiding the learners through Activity N16

- Explain what the learners will be able to do after this activity.
- Before asking them what they need to know, ask them what they do already know from the previous activities.
- Recap and discuss with the class before introducing the activity.
- This activity introduces the concept and skills of multiplying fractions. It uses the fraction circles and other examples to develop understanding of this. Rather than just telling learners a rule to follow, guide learners to identify the rule or the pattern through the early tasks and examples.
- Introduce and discuss the term and concept of a 'poll' or 'survey'. Encourage learners to discuss this and to say what they know about surveys or polls. Encourage them to find a recent poll in a newspaper or on the internet.
- You could ask learners to carry out a survey or surveys. They could work in pairs or small teams to identify a question that they are interested in, and to survey other learners and staff in the centre on that question. You could use the results of those surveys as the basis for fraction activities that would cover the same learning points.
- Using the fraction circles, give the learners a $\frac{1}{4}$ piece and ask them what $\frac{1}{2}$ of this piece is? Encourage them to use the fraction circles to come to an answer.
- When they have grasped that concept, move on to explain that the word '**of**' can be replaced with the **multiplication sign**. Also explain that when multiplying fractions we must multiply the numerators together and the denominators together.
- Encourage learners to work through the other tasks. When it arises, explain the concept of improper fractions.
- In the task about the poll refer back to the fraction circles to remind learners what we are doing when finding $\frac{3}{5}$ of 275.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.

- Encourage learners to enter the new terminology and new symbols in their personal maths dictionaries.
- Encourage learners to explain to you and each other how they work out their answers. Encourage them to ask questions.
- The extension activity below provides further opportunity to identify where multiplication of fractions arises in real life. It also requires learners to use their knowledge of writing whole numbers as fractions and converting improper fractions to mixed numbers. You may wish to use this as a further teaching and learning activity or as a pre-assessment task.

Extension Activity: The Lawnmower



Use what you have learned about multiplying fractions to work out the answer to the following question:

Some lawnmower engines run on a mixture of petrol and oil.

Sean and Mary are gardeners. Their lawnmower engine runs on a mixture $\frac{3}{16}$ litres of oil for each litre of petrol used.

They need to make up a mixture for the engine.

They are using **8** litres of **petrol** for the mixture.

How much oil do they need to use?

Show how you worked out your answer.

Activity

At the salon

Code N17



This activity is linked to the **Award Learning Outcomes 1.2** and **1.5**.

Learning Outcomes

1. Understand the concept of dividing fractions.
2. Recognise the need to divide by fractions in real life situations.

Key Learning Points

1. Fractions
2. Division

You need to be familiar with previous fraction activities N9-N14.

Materials you will need

- Practice Sheet N17
- Solution Sheet N17
- Fraction circles may be useful for some tasks.

Prior learning

Learners should be familiar with the previous fraction activities.

Guiding the learners through Activity N17

- Explain what the learners will be able to do after this activity.
- Recap learning from previous fraction activities
- Introduce the concept of division of fractions by using illustrations, so that learners can visualise what it means.
- Ask questions using the illustrations, to show whole numbers (or units) divided by fractions. For example, ask learners what $4 \div \frac{1}{3}$ means. That is, three one thirds in every unit. So in 4 units we have $4 \times 3 = 12$. Illustrations are also used to show fractions divided by fractions, for example $\frac{2}{3} \div \frac{1}{6}$. Ask learners to think about what this is actually asking. That is, 'how many sixths there are in two - thirds?'
- Progress to the hairdressing activity. Remind learners that the question is asking how many $\frac{1}{20}$'s are in $\frac{8}{10}$?
- For Task 4 remind learners that they may need to refer back to their knowledge of **mixed numbers**. The answer is $2 \frac{7}{16}$ bottles. Encourage learners to give a **realistic** answer: that is, that the hairdresser will need at least 3 bottles of shampoo on this day.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Encourage learners to enter the new maths terminology in their personal maths dictionaries.
- Practice Sheet N17



This activity is linked to the **Award Learning Outcomes 1.1, 1.2, 1.5.**

Learning Outcomes

1. Recognise decimals
2. Understand the concept of place value

Key Learning Points

1. Decimals
2. Place Value

Materials

- Practice Sheet N18
- Solution Sheet N18
- The N18 tasks in the learner pack

Prior learning

Learners should be familiar with the maths in the activities so far.

Guiding the learners through Activity N18

- Explain what the learners will be able to do after this activity.
- Recap learning from the most recent activities.

- Before introducing the term **decimal** ask the learners themselves to talk about the differences between whole numbers and decimal numbers. One way of doing this is to look at a price list from a shop or a menu with prices on it and ask students if they notice any difference between the price of items? Or why they would get all just euros back in change if they bought one item and why they may get a mix of euros and coins less than a euro back buying other items?
- Before engaging in the activity on Olympic Records ask students do they think hundredths of seconds would ever be significant in real life? Is it enough just to use seconds and minutes? Why/why not?
- Once the term decimals has been introduced and its link to fractions has been highlighted it may be worthwhile to show some real life examples of decimals. For example a YouTube video showing a Formula 1 grand prix where the difference in times may only be hundredths of seconds. Also you should show how the monetary system depends heavily on decimals and how ten cent coins are effectively tenths cents are hundredths etc.
- It may be a good idea to show learners video clips of Phelps swimming the 100 metre butterfly either in Athens in 2004 or in Beijing in 2008.
- When discussing the answer to the sample activity it is important to clearly break down the time for the learners. Even though the answer is 50.58 seconds this could also be described as 5 tens, 0 units, 5 tenths of a second and 8 hundredths and you could connect this to their knowledge of place value in whole numbers.
- The grocery shopping task will help learners to further develop their knowledge of place value. Before learners begin this it is important to highlight the idea that ten cents is equivalent to one-tenth while one cent is equivalent to one-hundredth. This will put the idea of decimal place value in a real life context.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Encourage learners to enter the new maths terminology in their personal maths dictionaries.
- Practice Sheet N18 will give learners a chance to enhance their knowledge of place value and will allow them to identify units, tenths and hundredths. If they get stuck on this practice sheet it is advisable that they refer to the worked real life examples that they have completed and try to see how they identified different place values in these questions.



This activity is linked to the **Award Learning Outcomes 1.2 and 1.5.**

Learning Outcomes

1. Add decimals

Key Learning Points

1. Addition of Decimals

Materials you will need

- Practice Sheet N19
- Solution Sheet N19
- Map of Ireland and/or county
- Access to internet would be useful.
- A video of the relay race referred to in the Learner Pack would be useful (not essential).

Prior learning

- Learners need to be comfortable with the maths from N18
- It would be good to know which counties are in the West of Ireland.

Guiding the learners through Activity N19

- Explain what the learners will be able to do after this activity.
- Recap learning from the most recent activities.
- When introducing the concept of addition of decimals make sure to refer to Activity N16 and the idea of place value. Also highlight the links between the addition of whole numbers and the addition of decimals. For example we can only add numbers with the same place value no matter what type of number we are dealing with.

- Before starting the tasks, ask learners to work on identifying the distance between their home town, village or townland and nearby locations. Bring a map of the county and a map of Ireland to this session for that purpose.
- These distances can also be found on http://www2.aaireland.ie/routes_beta/. These distances are mainly given in decimal form. The learners can then write the distances onto the map in the class.
- Show learners that another way to find the distance to a particular destination may be to add two previously worked out distances.
- Ask learners if they have ever been on a trip around Ireland? How many kilometres were they travelling for? How would they be able to calculate the combined length of their journey?
- When answering the questions make sure that learners identify all the required pieces of information. There is a lot of writing in the questions so make sure they know what they are required to do and what information in the question will allow them to do this.
- The Relay Race task in will give learners further opportunities to see the real life uses of addition of decimals. Ask each learner to check their own solution by showing them a video clip of the Jamaican team running the 4 x 100 relay at Beijing 2008. The final time recorded on this video clip should be the answer that learners got when they added the four individuals time together.
- Use activities based on money to further develop their knowledge of place value. Stress the idea that when dealing with money ten cents is equivalent to one-tenth while one cent is equivalent to one-hundredth. This will again place the idea of place value in a real life context.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Encourage learners to enter the new maths terminology in their personal maths dictionaries.
- Finally Practice Sheet N19 will give students a chance to enhance their knowledge of adding decimals. Encourage learners to perform these calculations without using their calculator but also ask them to check their answer using their calculator.



This activity is linked to the **Award Learning Outcomes 1.2, 1.3 and 1.5.**

Learning Outcomes

- 1 Subtract decimals.
- 2 Combine addition and subtraction to solve problems

Key Learning Points

1. Subtraction of decimals

Materials

- Practice Sheet N20
- Solution Sheet N20

Prior Learning

- The relationship between grams and kilograms. 1 kilogram = 1000 grams and so 0.54 kilograms is 540 grams.
- The relationship between litres and millilitres. 1 litre = 1000 millilitres and so 0.05 litres is 50 millilitres.
- It is critical that learners have a deep understanding of the content covered in the previous two activities.

Guiding the learners through Activity N20

- Explain what the learners will be able to do after this activity.
- Recap and check learning from previous decimal activities.
- Learners should know that subtracting decimals is extremely important for a lot of everyday tasks. It is therefore advisable to begin this task by asking learners if they can think of instances where they may need to subtract decimals in their everyday life.
- Introduce learners to the idea of grams and kilograms and of millilitres and litres. Ask where they have encountered these quantities before? What are they used to measure? (for example, grams for food, litres for liquids). Are they aware of any relationship between grams and kilograms or between millilitres and litres?
- When introducing the relationship between grams and kilograms or between millilitres and litres it would be worthwhile using concrete examples. For example to show that $1\text{ kg} = 1000\text{g}$ the tutors may bring in two items one weighing 1 kg the other weighing 1000g and place them on a scales. The scales will then be balanced showing that these two quantities are equal. Similarly when showing $1000\text{ ml} = 1\text{ L}$ the tutors could show how 5 200 ml cartons fill a 1 litre bottle hence $5 \times 200 = 1000\text{ ml} = 1\text{ litre}$.
- Alternatively do this as a guided discovery activity. Let learners carry out an investigation to see how many cartons fill a litre bottle and then get them to identify the relationship between litres and millilitres.
- During the tasks it is important for learners to remember how to add decimals, while they move on to also using subtraction. Help them to recognise the difference between when they are required to add decimals and when they must subtract. It is critical to highlight that the word 'difference' requires learners to subtract.
- Encourage learners to enter the new maths terminology in their personal maths dictionaries.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Practice sheet N20 will give learners a chance to enhance their knowledge of adding and subtracting decimals. Encourage learners to perform these calculations without using their calculator but also ask them to check their answer using their calculator.

Activity

Bathroom Design

Code N21



This activity is linked to the Award **Learning Outcomes 1. 2, 1.3 and 1.5.**

Learning Outcomes

1. Multiply decimals by whole numbers.
2. Combine multiplication, addition and subtraction to solve problems.
3. Use decimals and fractions together when solving a problem.

Key Learning Points

1. Multiply Decimals

Materials

- Practice Sheet N21
- Solution Sheet N21
- The tasks in this section

Prior Learning

- Learners should be comfortable with previous decimal activities.

Guiding the learners through Activity N21

- Explain what the learners will be able to do after this activity.
- Recap and check learning from the previous decimal activities. Recap on the order of operations (BIDMAS) and tell learners that this order still applies when dealing with decimal numbers.
- Before introducing the concept of multiplication of decimals you could put a real life problem to the learners. For example: Ask learners to think of buying 10 bus tickets each costing €13.65. One way to calculate the cost is by saying “13.65 + 13.65 + 13.65....” and so on, adding 13.65 ten times. Ask learners if they can think of a quicker way to calculate the total cost of the tickets? Their answer to this should be to calculate the cost through multiplication.
- Recap on the multiplication of whole numbers before introducing the idea of multiplying decimals by whole numbers. **For example** you could show how $1 \times 10 = 10$ and $10 \times 10 = 100$ and ask learners what happens when we multiply by ten? The same principle then applies to decimals. Similar examples could also be shown for multiplying by 100. Use Task 1 to help with this part of the activity. Give examples also of multiplying by other small whole numbers 2, 4 etc.
- Before introducing the other tasks, ask learners have they ever bought things in bulk? How did they work out the total cost of these items?
- When reading the tasks it is important to remind learners of the basic idea of decimals and of place value and remind them that 79 cent is €0.79. Also remind them again how they must follow the BIDMAS order of operations when solving problems that require multiplication and addition.
- One of the tasks requires learners to find a half of a sum of money. At this stage it is important to recap on fraction multiplication. Ask learners if they can remember how to write “half of €607.30” mathematically.
- Another task uses multiplication of decimals to work out tax. A possible extension activity may be to ask learners to get a pay slip that they themselves may have from the past or that some relative or friend might have. This will give them another opportunity to practise multiplying decimals in a real life context.

- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Encourage learners to enter new maths terminology in their personal maths dictionaries.
- Practice sheet N21 will give learners a chance to enhance their knowledge of multiplying decimals and of applying the BIDMAS rule when dealing with decimals. Tutors should again encourage trainees to perform these calculations without using their calculator but they should also be encouraged to check their answer using their calculator.

Activity

Healthy Eating

Code N22



This activity is linked to the **Award Learning Outcomes 1.2, 1.3 and 1.5.**

Learning Outcomes

1. Divide decimals by whole numbers
2. Combine division, multiplication, addition and subtraction to solve problems

Key Learning Points

1. Divide decimals

Materials

- Practice Sheet N22
- Solution Sheet N22
- The tasks in this section
- Food labels

Prior Learning

- Learners should be comfortable with previous decimal activities

Guiding the learners through Activity N22

- Explain what the learners will be able to do after this activity.
- Recap and check learning from previous activity. Recap on the order of operations (BIDMAS) and remind learners that this order still applies when dealing with decimal numbers.
- Just as when teaching multiplication it may be a good idea to introduce the idea of dividing decimals by whole numbers by first looking back at dividing whole numbers by whole numbers. For example $100 \div 10 = 10$ but $100 = 100.0$. Ask learners: What happened the decimal point when we divided 100 by ten?
- For this activity it is again important for learners to understand the relationship between grams and kilograms and millilitres and litres.
- It would be useful to have some food labels available for learners to inspect. This would allow them to see how decimals feature heavily in this regard. In small groups, ask each member of the group to select one of the food types that they like. Using the label ask them to identify the amount of saturated fat in their preferred food. As a group ask them to find the combined amount of saturated fat in their chosen foods.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Encourage learners to enter new maths terminology in their personal maths dictionaries.
- Practice sheet N22 will give learners a chance to enhance their knowledge of dividing decimals and of applying the BIDMAS rule when dealing with decimals. Encourage learners to perform these calculations without using their calculator and to then use their calculator to check their answer.

Activity

Bargain Hunting

Code N23



This activity is linked to the **Award Learning Outcome 1.2, 1.3, 1.5**

Learning Outcomes

1. Understand what is meant by the term percentage.
2. See where percentages are used in the world around us.
3. Solve problems involving percentages.
4. Convert percentages to fractions.

Key Learning Points

1. Percentages
2. Conversion

Materials

- Practice Sheet N23
- Solution Sheet N23
- Newspaper cuttings or leaflets or brochures referring to percentages

Guiding the learners through Activity N23

- Explain what the learners will be able to do after this activity.
- Recap on learning from previous session.
- Begin by asking learners:
What do you remember about the term 'per cent'?
Where have you met percentages in your everyday life?
Can we represent percentages, for example 50%, in any other form?
- When introducing the idea of percentages it may also be worthwhile to bring in newspaper cuttings that refer to percentages. Such headlines appear quite frequently for example when discussing surveys or statistics or when advertising sales.
- The most important concept for the learners to understand is that per cent means 'per hundred' and it is important for tutors to constantly reiterate this idea.
- Learners will all have come across goods being sold at sale price and the activity should be introduced by referring to this idea. The activity could also be further extended by getting learners to look up sales items on the internet and seeing how much they would save on particular items that they would have an interest in buying. This could be done as a group activity.
- The task on donations to charity refers to how charities spend their money and how much of your donation reaches those affected by poverty. The Charity Navigation website also explains how charities other than the one referred to in the question allocate their money: a group project may be to decide which charity you would be best donating your money to in order for the greatest proportion of your money to reach the intended people. Keep in mind that the percentages given on this website are often decimal numbers - for example, 4.6% : you might want to round these figures up or down to keep the percentages as whole numbers.
- Practice Sheet N23. Encourage learners to perform these calculations first without using their calculator and then to check their answer using their calculator.
- Encourage learners to enter any new terminology or symbols into their personal maths dictionaries.

Activity

Big Brother Task

Code N24



This activity is linked to the **Award Learning Outcomes 1.2, 1.3 and 1.5.**

Learning Outcomes

1. Convert decimals to fractions.
2. Solve problems that involve a mixture of fractions decimals and percentages.

Key Learning Points

1. Conversion

Materials

- Practice Sheet N24
- Solution Sheet N24

Prior learning

- Learners will need to have a thorough understanding of fractions and decimals before engaging in this activity. They will also need to appreciate the need to convert percentages to fractions.
- It would be useful to know something about the reality TV show Big Brother or similar shows where groups are set tasks and problems to solve.

Guiding the learners through Activity N24

- Explain what the learners will be able to do after this activity.
- Recap and check learning from last activity.
- Recap on the idea of place value. This will help learners to come to grips with the method used for writing decimals as fractions. Recap that 0.1 is one tenth and then ask learners how one tenth can be written in fraction form. Then ask about the relationship between 0.1 and 0.6 and how this would then affect the fraction. So by recapping on previously covered material you should be able to introduce this new concept to the learners.
- Throughout this activity it is important to instruct learners to try to solve the problems without the use of calculators. This will give them practice in converting the percentages and decimals to fractions in order to solve the problems.
- One of the tasks uses the example of football players' wages. Try to use other topics or situations that would be of interest to your particular learners.
- Encourage learners to enter new terminology in their personal dictionaries.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Practice Sheet N24. Encourage learners to perform these calculations without using their calculator and then to check their answers using their calculator.



This activity links to the **award learning outcomes 1.2, 1.3 and 1.5**

Learning Outcomes

1. Convert fractions to percentages
2. Convert decimals to percentages.

Key Learning Points

1. Conversion

Materials

- Practice Sheet N25
- Solution Sheet N25

Guiding the learners through Activity N25

- introduce this topic by discussing the importance of percentages in the world around us. Ask learners to discuss as a class the relationship between fractions, decimals and percentages.
- Recap the meaning of the word per cent.
- In order to convert decimals to percentages it is critical that learners first know how to convert decimals into fractions. Revisit Activity N24 to ensure learners have a thorough understanding of this concept.
- When introducing the task to the learners, ask them if they think it is necessary to convert the fractions and decimals to percentages? And if so why?
- The statistics outlined in Activity N25 were found on www.examinations.ie in 2010. You could ask learners to visit the website for current statistics. You could adapt the activity accordingly.
- The activity on the breakdown of seats for different political parties: These statistics were found on <http://electionsireland.org/results/general/30dail.cfm> in 2010. You and/or the learners could find more up to date statistics and adapt the activity accordingly.

You could break the results down in other ways: for example, the percentage of males and females, the percentage of seats in each different province and so on. The statistics on the website give a range of opportunities for group work and maths project work.
- Practice Sheet N25. Encourage learners to do these calculations without using their calculator but to check their answer using their calculator.

Activity

Rounding Off

Code N26



This activity is linked to the **Award Learning Outcomes 1.4.**

Learning Outcomes

1. Round off large natural numbers
2. Understand the need to round off numbers.

Key Learning Points

1. Round off

Materials

- Practice Sheet N26
- Solution Sheet N26
- Video of Lotto ad (optional)

Prior learning

- Learners will need to understand place value.

Guiding the learners through Activity N26

- Explain what the learners will be able to do after this activity.
- Recap and check learning from last activity.
- In the whole group, use questions and discussion to introduce this topic, for example: Can you recall any time you encountered large natural numbers in your everyday life? Were these numbers easy to handle? Would it be easy to perform operations such as multiplication on these numbers? Can you think of any way that you may be able to make these numbers easier to work with?
- Following on from this discussion you could show learners a recent Lotto ad advertising a large prize fund. If the jackpot was €16,987,654 the advertisement would say that the Lotto was **close to** 17 million! Ask learners to discuss why the advertisement is saying that the fund is closer to 17 million than 16 million. This will introduce the concept of rounding off numbers in real life.
- When rounding off and then multiplying by a number this will obviously only give us an approximate figure. As part of the activity learners could work out the difference between the approximate figure and the actual figure.
- Encourage learners to enter new terminology in their personal dictionaries.
- Use pairs, small group work and whole group work as well as individual work, according to your judgement of what would work best for your learners at that particular time.
- Finally Practice Sheet N26 will give learners a chance to practise rounding off more figures to either tens, hundreds or thousands.

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